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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/802,044

03/17/2004

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05/29/2009

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EXAMINER

DAO, THUY CHAN

ART UNIT

PAPER NUMBER

2192

MAIL DATE

DELIVERY MODE

05/29/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                    |  |
|------------------------------|--------------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/802,044 | <b>Applicant(s)</b><br>TARR ET AL. |  |
|                              | <b>Examiner</b><br>Thuy Dao          | <b>Art Unit</b><br>2192            |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 28-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 28-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This action is responsive to the amendment filed on February 27, 2009.
2. Claims 1-22 and 28-36 have been examined.

### **Response to Amendments**

3. In the instant amendment, claims 1, 20, 22, and 28-30 have been amended; claims 33-36 have been added.

### **Response to Arguments**

4. Applicants' arguments have been considered but are moot in view of the new ground(s) of rejection.

### **Claim Rejections – 35 USC §102**

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

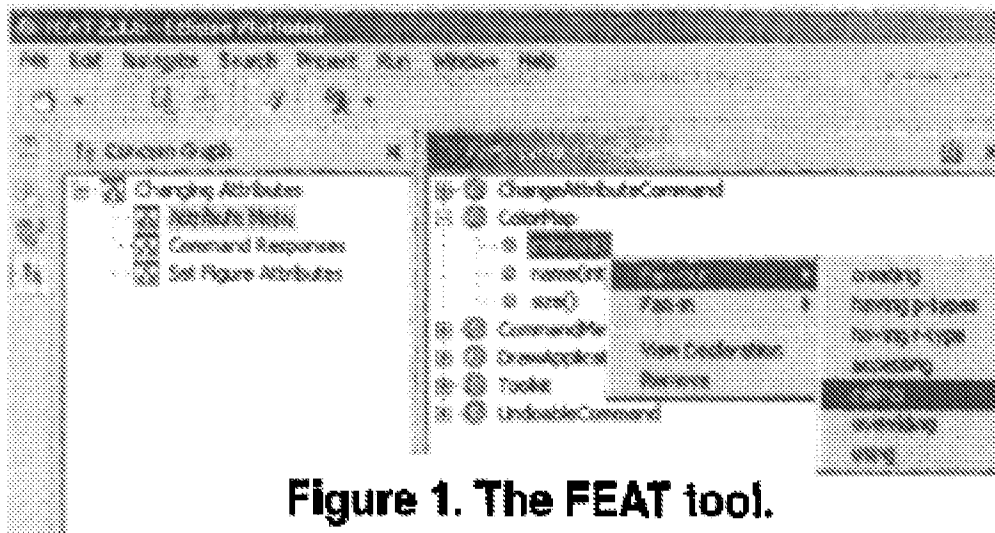
(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims 1-16, 18, 20, 21 and 28-32 are rejected under 35 U.S.C. 102(a) as being anticipated by Robillard-Murphy (art of record with a new ground of rejection, "FEAT a tool for locating, describing, and analyzing concerns in source code").

#### **Claim 1:**

Robillard-Murphy discloses *a system for identifying concerns, comprising:*

*a specifying device (e.g., FIG.1, FEAT embedded in Eclipse Platform computer) for specifying an initial concern (e.g., specifying/expanding Changing Attribute, "an initial concern") in a software system (Concern Graph as "a software system") and*



*an identifying device for exploring said software system (e.g., FEAT/Eclipse Platform computer explores/expands Changing Attribute (an initial concern) to display Attribute Menu, Command Responses and Set Figure Attributes (related concerns) in said Concern Graph (said software system)) and,*

based on a result of said exploring said software system, identifying a related concern in said software system having a relationship with said initial concern (e.g., FIG.1, based on a result of automatically exploring/retrieving/displaying, FEAT identifies Attribute Menu, Command Responses, and Set Figure Attributes (related concerns) having a relationship sub-concern with Changing Attributes (the initial concern));

said identifying device computing a content of said related concern based on said initial concern and said relationship between said initial and related concerns (e.g., FIG. 1, based on Changing Attributes (the initial concern) and the relationship (sub-concern) of Attribute Menu (related concern), FEAT (said identifying device) computes all participants in said Attribute Menu (all contents in said related concern) and displays them as ChangeAttributeCommand, ColorMap, Toolkit ...).

### Claim 2:

The rejection of claim 1 is incorporated. Robillard-Murphy discloses *said initial concern comprises a plurality of entities* (e.g., FIG. 1, Changing Attributes (initial concern) has at least three sub concerns in said Concern Graph).

**Claim 3:**

The rejection of claim 1 is incorporated. Robillard-Murphy discloses *said relationship comprises a call to said initial concern* (e.g., FIG. 1, top-middle and top-right windows, Attribute Menu (initial concern) has ColorMap.color(int) is called by DrawApplication.createColorMenu(String, String)).

**Claim 4:**

The rejection of claim 1 is incorporated. Robillard-Murphy discloses *said relationship comprises a call from said initial concern* (e.g., FIG. 1, Attribute Menu (initial concern) has ColorMap.color(int) calling ColorMap.size()).

**Claim 5:**

The rejection of claim 1 is incorporated. Robillard-Murphy discloses *said relationship comprises a same class that can be created by the concern, a same class that can be created from the concern, a reference to same data as the initial concern, and a union or intersection of two concerns* (e.g., page 1, col.2, lines 1-28).

**Claim 6:**

The rejection of claim 1 is incorporated. Robillard-Murphy discloses *said specifying device comprises a query tool for inputting a query, such that said initial concern is returned as a result of said query* (e.g., page 2, FIG. 1, pop-up window → Fan-out to input a query “calling” or pop-up window → Fan-in to input another query “called by”).

**Claim 7:**

The rejection of claim 1 is incorporated. Robillard-Murphy discloses *said initial concern and said related concern comprise source code in said a software system* (e.g., page 2, FIG. 1, bottom window).

**Claim 8:**

The rejection of claim 1 is incorporated. Robillard-Murphy discloses *said initial concern and said related concern comprise other than source code in said a software system* (e.g., page 1, col.2).

**Claim 9:**

The rejection of claim 6 is incorporated. Robillard-Murphy discloses *a navigating device for navigating said software system in an integrated development environment IDE* (e.g., page 3, right column: 25-39).

**Claim 10:**

The rejection of claim 6 is incorporated. Robillard-Murphy discloses *said system is part of an integrated development environment (IDE) for displaying said initial concern and said related concern, and navigating said software system* (e.g., page 1, col.2).

**Claim 11:**

The rejection of claim 9 is incorporated. Robillard-Murphy discloses *said navigating device comprises a graphical user interface (GUI) for using said initial concern and said related concern to explore said software system and construct a new software system* (e.g., page 1, col.1 and FIG. 1).

**Claim 12:**

The rejection of claim 9 is incorporated. Robillard-Murphy discloses *said navigating said software system comprises navigating said software system using both*

*virtual and actual structuring of different artifacts within said software system (e.g., page 1, col.2).*

**Claim 13:**

The rejection of claim 9 is incorporated. Robillard-Murphy discloses *said navigating said software system comprises using said navigating device to explore concerns and the relationships between said concerns based on a visual representation of query results (e.g., page 1, col.2; FIG. 1 and related text in page 2. col.1).*

**Claim 14:**

The rejection of claim 9 is incorporated. Robillard-Murphy discloses *said navigating device comprises a visual diagram which gives call relations between different parts of a program selected by query operators expressed as regular expressions (e.g., FIG. 1, top-right window, Relations such as “used by”, “called by” and “calling”).*

**Claim 15:**

The rejection of claim 1 is incorporated. Robillard-Murphy discloses *said identifying said related concern comprises automatically generating said related concern (e.g., page 1, col.2, creating new concerns; FIG. 1, Concern Graph refreshed to display new concerns).*

**Claim 16:**

The rejection of claim 1 is incorporated. Robillard-Murphy discloses *said specifying device comprises at least one of a keyboard and a mouse for specifying said initial concern (e.g., page 2, FIG. 1, using mouse to expand Concern Graph).*

**Claim 18:**

Robillard-Murphy discloses *a concern manipulation environment (CME) comprising the system of claim 1 (e.g., pp. 1-2).*

**Claim 20:**

Robillard-Murphy discloses *a system for identifying concerns, comprising:*

*a specifying device (e.g., FIG.1, FEAT embedded in Eclipse Platform computer) for specifying a query against artifacts related to software development, including software, generated code, or models and information about software (e.g., page 1, col.1-col.2),*

*said query comprising an initial concern (e.g., specifying/expanding Changing Attribute, “an initial concern”);*

*means for displaying the results of the query, said results comprising a related concern having a relationship with said initial concern (e.g., FIG.1, based on a result of automatically exploring/retrieving/displaying, FEAT identifies Attribute Menu, Command Responses, and Set Figure Attributes (related concerns) having a relationship sub-concern with Changing Attributes (the initial concern)),*

*a content of said related concern being computed based on said initial concern and said relationship between said initial and related concerns (e.g., page 2, FIG. 1, FEAT/Concern Graph, pop-up windows → Fan-out / Fan-in → calling / called by; FIG. 1, based on Changing Attributes (the initial concern) and the relationship (sub-concern) of Attribute Menu (related concern), FEAT (said identifying device) computes all participants in said Attribute Menu (all contents in said related concern) and displays them as ChangeAttributeCommand, ColorMap, Toolkit ...); and*

*means for updating the query when at least one of new artifacts are introduced, artifacts are deleted, and artifacts are changed (e.g., page 1, col.2; FIG. 1, using left right click to popup windows → Fan-out / Fan-in to refresh/update the query).*

**Claim 21:**

The rejection of claim 20 is incorporated. Robillard-Murphy discloses *said results of said query comprise a concern (e.g., FIG. 1, Concern Graph comprises one root concern and three sub concerns).*



**Claim 28:**

Robillard-Murphy discloses *a method of generating concerns, comprising:*

*identifying a first concern in a software system (e.g., FIG. 1, concern Changing Attributes has three sub concerns in Concern Graph; Concern Graph as a software system);*

*examining a program using said first concern (e.g., FIG. 1, examining code in the bottom window using Changing Attributes (first concern in Concern Graph));*

*identifying a second concern in said software system using said first concern and text of said program (e.g., Concern Graph identifies three sub concerns Attributes Menu, Command Responses and Set Figure Attributes, Relations window, Source Code window (three second concerns));*

*a content of said second concern being computed based on said first concern and said relationship between said first and second concerns FIG. 1, based on Changing Attributes (the first concern) and the relationship (sub-concern) of Attribute Menu (second concern), FEAT (said identifying device) computes all participants in said Attribute Menu (all contents in said related concern) and displays them as ChangeAttributeCommand, ColorMap, Toolkit ...; and*

*displaying and navigating concerns in an integrated development environment IDE (e.g., FEAT embedded in Eclipse Platform IDE).*

**Claim 29:**

Claim 29 is a programmable storage medium version, which recite(s) the same limitations as those of claim 1, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the reference teaches all of the limitations of the above claim(s), it also teaches all of the limitations of claim 29.

**Claim 30:**

Claim 30 is a method version, which recite(s) the same limitations as those of claim 1, wherein all claimed limitations have been addressed and/or set forth above.

Therefore, as the reference teaches all of the limitations of the above claim(s), it also teaches all of the limitations of claim 30.

**Claim 31:**

The rejection of claim 1 is incorporated. Robillard-Murphy discloses *said initial concern and said related concern comprise a part of said software system which relates to some concept, goal, purpose or requirement* (e.g., page 1, col.1-col.2).

**Claim 32:**

The rejection of claim 1 is incorporated. Robillard-Murphy discloses *said initial concern and said related concern comprise at least one of a feature, component, variant, user interface, instrumentation, first-failure data capture, quality of service, security, and policy* (e.g., page 1, col.2; FIG.1 and related text).

**Claim 35:**

Robillard-Murphy discloses *the system according to claim 1, wherein said identifying said related concern comprises generating a concern model which represents said initial and related concerns* (e.g., FIG. 1, Change Attributes and Attribute Menu represented as tree-like structure in the FEAT user interface),

*a relationship between said initial and related concerns* (e.g., FIG. 1, Change Attributes contains Attribute Menu, Command Responses, and Set Figure Attributes),  
and

*a constraint on said initial and related concerns* (e.g., Concern Graph classifies them as having the same features/aspects, i.e., sub-concerns of Changing Attributes).

**Claim 36:**

Robillard-Murphy discloses *the system according to claim 35, further comprising: a concern explorer for viewing, navigating and querying said concern model* (e.g., FIG. 1, Concern Graph, menu “Navigate”, “Search”).

### **Claim Rejections – 35 USC §103**

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Robillard (art of record with a new ground of rejection, “A Study of Program Evolution Involving Scattered Concerns”) in view of Robillard-Murphy.

#### **Claim 22:**

Robillard discloses *a method of identifying concerns, comprising:*

*specifying at least one initial concern in a software system (e.g., page 4, FIG. 1, Concern Graph as a software system; Concern Graph (software system) has DrawApplication as initial concern; page 4, left column: 1-35);*

*exploring said software system and, based on a result of said exploring said software system, identifying at least one related concern (e.g., createArrowMenu() as related concern) in said software system having a relationship with said at least one initial concern (e.g., page 4, FIG. 1, DrawApplication (initial concern) implements/has a member method createArrowMenu() (related concern));*

*a content of said related concern being computed based on said initial concern and said relationship between said initial and related concerns (e.g., FEAT computes all parameters in said member method createArrowMenu (related concern) and displays its called such as ChangeAttributeCommand);*

*navigating said software system in Eclipse Platform (e.g., page 3),*

*wherein said relationship comprises at least one of a call to said at least one initial concern and a call from said at least one initial concern (e.g., main program calls DrawApplication (initial concern) and DrawApplication calls createArrowMenu()),*

*wherein said specifying said at least one initial concern comprises using a query tool for inputting a query, such that said initial concern is returned as a result of said query (e.g., Figure 1, in top-right panel “Concern Graph”, using mouse to double-click/click on “Tutorial” to query sub-concerns such as Attribute Figure and Command; click on Command to display its participants such as ChangeAttributeCommand, DrawApplet, and DrawApplication),*

*wherein said identifying said at least one related concern comprises automatically generating said at least one related concern (e.g., page 4, Figure 1, FEAT automatically generates/displays related concerns such as member methods of DrawApplication), and*

*wherein said at least one initial concern comprises at least one of an extensional concern (e.g., initial concern “DrawApplication” as an external concern, which includes pieces of member methods) and*

*an intensional concern (e.g., page 4, Figure 1, initial concern “DrawApplication” as an intensional concern, which includes member methods with prefix “create”).*

Robillard discloses FEAT embedded/plugged-in in Eclipse Platform (page 4, Figure 1) but does not explicitly disclose *Eclipse Platform as an integrated development environment (IDE)*.

However, in an analogous art, Robillard-Murphy further discloses *Eclipse Platform as an integrated development environment (IDE)* (e.g., page 1, col.1-col.2).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Robillard-Murphy’s teaching into Robillard’s teaching. One would have been motivated to do so to integrate the FEAT tool as a plugin into the Eclipse Platform IDE as suggested by Robillard-Murphy (e.g., page 1, col.1 – col.2).

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Robillard-Murphy in view of Chu-Carroll (art of record, US Patent Publication No. 2002/0198873 A1).

**Claim 17:**

The rejection of claim 1 is incorporated. Robillard-Murphy do not explicitly disclose *said specifying said initial concern comprises defining a query language comprising a set of operators and evaluation properties that together work to identify concerns within different artifacts that make up a software system.*

However, Chu-Carroll further discloses *said specifying said initial concern comprises defining a query language comprising a set of operators and evaluation properties that together work to identify concerns within different artifacts that make up a software system* (e.g., [0034], [0049], [0105], [0131]).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Chu-Carroll's teaching into Robillard-Murphy's teaching. One would have been motivated to do so to view dynamic concerns, which includes changed/modified program elements as suggested by Chu-Carroll (e.g., [0044]-[0046]).

10. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Robillard-Murphy in view of Robillard.

**Claim 19:**

The rejection of claim 18 is incorporated. Robillard-Murphy does not explicitly disclose *a data structure is maintained for keeping concerns in sync with changes in a software system.*

However, in an analogous art, Robillard further discloses *a data structure is maintained for keeping concerns in sync with changes in a software system* (e.g., page 3, right column: 41 – page 4, left column: 34).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Robillard's teaching into Robillard-Murphy's teaching. One would have been motivated to do so to display/view the dynamic

concerns, which includes changed/modified classes and methods as suggested by both Robillard (e.g., pp. 1-2) and Robillard-Murphy (e.g., page 1, col.1 – col.2).

11. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Robillard-Murphy in view of US Patent No. 2002/0174093 A1 to Casati et al. (art made of record, hereafter “Casati”).

**Claim 19 (new):**

Robillard-Murphy does not explicitly disclose *the system according to claim 1, wherein said related concern is automatically computed by exploring artifacts in said software system to determine said relationship by using one of pattern-matching and data mining.*

However, in an analogous art, Casati further *said related concern is automatically computed by exploring artifacts in said software system to determine said relationship by using one of pattern-matching and data mining* (e.g., [0034]).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Casati's teaching into Robillard-Murphy's teaching. One would have been motivated to do so to effectively explore contents of the data warehouse as suggested by Casati (e.g., [0034]).

12. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Robillard-Murphy in view of US Patent No. 6,804,686 to Stone et al. (art made of record, hereafter “Stone”).

**Claim 34 (new):**

Robillard-Murphy does not explicitly disclose *the system according to claim 1, wherein at least one of said initial concern and said related concern comprises a unified modeling language (UML) artifact.*

However, in an analogous art, Stone further discloses *the system according to claim 1, wherein at least one of said initial concern and said related concern comprises a unified modeling language (UML) artifact* (e.g., FIG. 8A, col.18: 54 – col.19: 15, UML Browser Interface, which browses/explores/navigates UML classes).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Stone's teaching into Robillard-Murphy's teaching. One would have been motivated to do so to browse/explore/navigate UML classes as suggested by Stone (e.g., col.18: 54 – col.19: 15).

### **Conclusion**

13. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication should be directed to examiner Thuy Dao (Twee), whose telephone/fax numbers are (571) 272 8570 and (571) 273 8570, respectively. The examiner can normally be reached on every Tuesday, Thursday, and Friday from 6:00AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam, can be reached at (571) 272 3695.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273 8300.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is (571) 272 2100.

Art Unit: 2192

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Thuy Dao/

Examiner, Art Unit 2192

/Tuan Q. Dam/

Supervisory Patent Examiner, Art Unit 2192